



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,189	11/25/2003	Steven T. Fink	245344US6YA	4219
22850 7590 03/12/2007 OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER CROWELL, ANNA M	
			ART UNIT	PAPER NUMBER
			1763	
SHORTENED STATUTORY PERIOD OF RESPONSE		NOTIFICATION DATE	DELIVERY MODE	
3 MONTHS		03/12/2007	ELECTRONIC	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 03/12/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
oblonpat@oblon.com  
jgardner@oblon.com

## Office Action Summary

Application No.

10/720,189

Applicant(s)

FINK, STEVEN T.

Examiner

Michelle Crowell

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9-21 is/are pending in the application.
- 4a) Of the above claim(s) 4,5,18 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 7, 9-17, 20, and 21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12-21-2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 22, 2007 has been entered.

### ***Election/Restrictions***

1. Claims 4, 5, 18, and 19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on January 19, 2006.
2. Applicant's election with traverse of Species I, claims 1-4 and 6-11 is acknowledged. The traversal is on the ground(s) that no reasons were given in the Restriction Requirement as to why the claims are independent and/or distinct. This is not found persuasive because where two or more species are claimed, a requirement for restriction to a single species is proper if the species are mutually exclusive. Additionally, the search required for the features of the elected species is not co-extensive with the search required for the features of the non-elected species

The requirement is still deemed proper and is therefore made FINAL.

***Drawings***

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "16" has been used to designate both pressure manometers (Fig. 4) and wafer chuck assembly/lower electrode (Figs. 1, 2A, 2B, 2C). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

Art Unit: 1763

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, 2, 6, 9-16, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider et al. (U.S. 6,261,403) in view of Takagi (U.S. 6,676,759)

Referring to Figures 2, 5, 6, and column 2, line 61-column 5, line 61, Schneider et al. teaches a plasma processing system comprising: a process chamber 100 (col. 3, lines 1-3); an upper electrode assembly 12 (par.[0002], [0004]-Drawing 1); a upper electrode assembly 102 (col. 3, lines 25-31); a pressure detector configured to detect pressures in the process chamber; a fluid flow control member 104 (Figs. 3&4 col. 4, lines 1-5, col. 4, line 56-col. 5, line 10); and a chuck assembly 124, 126, 118, 134 including a lift pin assembly 162 (Fig. 5,col. 4, lines 1-5), for lifting the fluid flow control member at least one location, the lift pin assembly includes a lift pin to directly lift the fluid flow control member, and the lift pin is configured to be controlled based on the pressures detected by the pressure detector.

Schneider et al. fail to teach a plurality of pressure detectors; however, it is obvious to one of ordinary skill in the art to provide the chamber of Schneider et al. with a plurality of pressure detectors in order to yield a more precise and reliable pressure measurement. Additionally, although the reference did not disclose a plurality of pressure detectors, the court held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced (In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960)).

Schneider et al. fail to teach a plurality of lift pin assemblies; however, it is obvious to one of ordinary skill in the art to provide the chamber of Schneider et al. with a plurality of lift pin assemblies in order to provide more stable lifting. Additionally, although the reference did

Art Unit: 1763

not disclose a plurality of lift pin assemblies, the court held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced (*In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960)).

Schneider et al. fail to explicitly show that the fluid flow control member includes a plurality of recesses and that a lift pin is configured to engage with a respective recess of the fluid flow control member.

Referring to Figures 3A, 3B, 6A, 6B, column 5, lines 19-27, Takagi teaches a processing system wherein a member 32 or 132, 133 includes a plurality of recesses 66 and a lift pin 48 is configured to engage with a respective recess of the member. The recess allows for a secure fit for the lift pin. Additionally, this is an alternate and equivalent arrangement for lifting a member. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the fluid flow control member of Schneider et al. to include a recess as shown in Takagi so that the lift pin is configured to engage with a respective recess of the fluid flow control member since this an alternate and equivalent arrangement for lifting a member which provides a secure fit between the recess and the lift pin.

With respect to claim 2, the apparatus of Schneider et al. further includes an RF electrode 152 (col. 3, lines 24-31).

With respect to claims 6 and 20, the apparatus of Schneider et al. in view of Takagi further teaches the plasma processing system further includes that the lift pins of each of the plurality of lift pin assemblies are lifted simultaneously (Schneider et al. – obvious to have a plurality of lift pins 162, Fig. 2, 5, 6 or Takagi-lift pins 48, Fig. 1).

With respect to claim 9, the apparatus of Schneider et al. in view of Takagi further

Art Unit: 1763

teaches the plasma processing system further comprises a vacuum port 138 located next to at least one of the plurality of lift pins (Schneider et al. , Drawing 2).

With respect to claim 10, the apparatus of Schneider et al. in view of Takagi further teaches in a movable focus ring the improvement comprising: a hole 60 for facilitating lifting of the focus ring by lift pins (Takagi, col. 5, lines 13-17).

With respect to claim 11, the apparatus of Schneider et al. in view of Takagi further teaches in a movable focus ring the improvement comprising: a recess 66 for facilitating lifting of the focus ring by lift pins (Takagi, col. 5, lines 19-27).

With respect to Claims 12 and 15, the apparatus of Schneider et al. in view of Takagi further teaches the plasma processing system of claim 1, wherein the lift pin 48 extends through a horizontal surface of the chuck assembly 22 when the lift pin is fully retracted (Takagi, Fig. 3B or 6B).

With respect to Claims 13 and 16, the apparatus of Schneider et al. in view of Takagi further teaches the plasma processing system of claim 12, wherein the lift pin 48 engages the respective recesses 66 of the fluid flow control member when the lift pin is fully retracted (Takagi, Fig. 3B or 6B).

8. Claims 3 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider et al. (U.S. 6,261,403) in view of Takagi (U.S. 6,676,759) as applied to claims 1, 2, 6, 9-16, and 20 above, and further in view of Yamaguchi (J.P. 05-150771).

The teachings of Schneider et al. in view of Takagi have been discussed above.

Art Unit: 1763

Schneider et al. in view of Takagi fail to specifically teach the fluid flow control member comprises a focus ring.

Referring to paragraphs [0026], Yamaguchi teaches a plasma processing apparatus wherein the fluid flow control member comprises a focus ring 24b in order to improve the homogeneity of the plasma at the time of processing. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the fluid control member of Schneider et al. in view of Takagi with the focus ring of Yamaguchi in order to improve the homogeneity of the plasma at the time of processing.

9. Claims 7 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider et al. (U.S. 6,261,403) in view of Takagi (U.S. 6,676,759) as applied to claims 1, 2, 6, 9-16, and 20 above, and further in view of Koike (U.S. 2002/0072240 A1).

The teachings of Schneider et al. in view of Takagi have been discussed above.

Schneider et al. in view of Takagi fail to specifically teach the lift pins are controllable to be lifted individually.

Referring to paragraphs [0051]-[0054], Koike teaches a plasma processing apparatus wherein each lift mechanism is controlled individually in order for the processing rate to remain constant [0064]. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention for each lift pin of Schneider et al. in view of Takagi to be lifted individually as taught by Koike in order for the processing rate to remain constant.



***Response to Arguments***

10. Applicant's arguments with respect to claims 1-3, 6-7, 9-17, and 20-21 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lubomirsky et al.'466, Harashima et al.'824, and Nagakura teach wafer lifting pins that are lifted in response to pressure detection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Crowell whose telephone number is (571) 272-1432. The examiner can normally be reached on M-F (9:30 -6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571) 272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/720,189

Page 9

Art Unit: 1763

Michelle Crowell

Patent Examiner

Art Unit 1763

*me*

*pt*

Parviz Hassanzadeh

Supervisory Patent Examiner

Art Unit 1763